

REMARKS

In the Final Office Action mailed 30 March 2009, the Examiner reviewed claims 1-15 and 31-35. The Examiner has rejected claims 1-2, 8 and 31 under 35 U.S.C. §103(a); has rejected claim 13 under 35 U.S.C. §103(a); has rejected claims 3-5, 7 and 14 under 35 U.S.C. §103(a); has rejected claims 3-7 under 35 U.S.C. §103(a); has rejected claims 9, 12, 32 and 35 under 35 U.S.C. §103(a); has rejected claims 10 and 33 under 35 U.S.C. §103(a); has rejected claims 11 and 34 under 35 U.S.C. §103(a); and has rejected claim 15 under 35 U.S.C. §103(a).

Applicant has **amended** claims 1, 9-13 and 31 and has **canceled** claim 8. Claims 1-7, 9-15 and 31-35 will be pending after entry of this amendment.

Rejection of Claims 1-2, 8 and 31 under 35 U.S.C. §103(a)

Claims 1-2, 8 and 31 are rejected under 35 U.S.C. §103(a) as being unpatentable over Makita (US 20010050101), McArthur (US 4,184,476) and Hartman (US 2,873,698).

Rejection of Claim 13 under 35 U.S.C. §103(a)

Claims 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1.

Rejection of Claims 3-5, 7 and 14 under 35 U.S.C. §103(a)

Claims 3-5, 7 and 14 are rejected under 35 U.S.C. §103(a) as being Makita, McArthur and Hartman as applied to claim 1, in view of Gauvin (US 6,130,781).

Rejection of Claims 3-7 under 35 U.S.C. §103(a)

Claims 3-7 are rejected under 35 U.S.C. §103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1, in view of Berman (US 4,663,085 as cited in the IDS).

Rejection of Claims 9, 12, 32 and 35 under 35 U.S.C. §103(a)

Claims 9, 12, 32 and 35 are rejected under 35 U.S.C. §103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claims 1 and 31, respectively, in view of Mori (US 6,218,609).

Rejection of Claims 10 and 33 under 35 U.S.C. §103(a)

Claims 10 and 33 are rejected under 35 U.S.C. §103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 8, in view of Berman and Samuelson (US 4,692,557).

Rejection of Claims 11 and 34 under 35 U.S.C. §103(a)

Claims 11 and 34 are rejected under 35 U.S.C. §103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claims 8 and 31, respectively, in view of Nath et al. (US 5,968,287 as cited in the IDS).

Rejection of Claim 15 under 35 U.S.C. §103(a)

Claim 15 is rejected under 35 U.S.C. §103(a) as being unpatentable over Makita, McArthur and Hartman as applied to claim 1, in view of McDonough (US 6606823 as cited in the IDS).

The Cited Art

The **Mikita** patent publication shows, at figure 2, a roof type support structure including sheathing roof board 2207 covered by a waterproof roofing membrane 2206. A solar cell module 2001 is supported on membrane 2206/roof board 2207 by spacers 2205 using fixing members 2203 and screws 2204. Solar cell modules and solar cell-free modules can be arranged to be situated next to one another on, for example, a carport. (¶¶ [0006], [0097])

The **MacArthur** patent discloses a building 15 including a foundation 17 from which vertical columns 16 extend to partially form the sides of the building. Rafters 18 extend at an angle from the top of columns 16 to partially form the roof. Horizontal wall and roof purlins 20 are mounted to columns 16 and rafters 18 forming the basic framework for building 15. External wall and roof panels 22 are mounted on the wall and roof purlins 20 to form the building walls and roof. At selected positions along the typically south facing walls and roof, solar energy collectors 24 are used to replace wall and roof panels 22. Solar energy collectors 24 include a transparent exterior panel 28, an interior panel 50 and a thermal solar energy absorbing panel 30 therebetween. The panels 30, 50 and purlins 20 form a heated air passageway. As shown in figures 9 and 11, air from the interior of building 15 passes through an inlet grill 54, through the heated air passageway, through an air duct 55 and back into the room through a blower 56.

The Hartman patent discloses a carport structure having four columns 24, 26 supporting a roof including a roof frame (elements 10-13 plus cross beams 15, 16) supporting roof sheets 20. (1/64-70)

The Cited Art Distinguished

Independent claim 1 has been amended to incorporate a modified version of claim 8. As to protective panels, the Examiner refers to the Mikita patent teaching "a protective panel (2206) mounted to at least one of the mounting structure and the PV module opposite (2201)" However, element 2206 of Mikita is a waterproofing roofing member mounted on top of sheathing roof board 2007. In contrast, this aspect of claim 1 is distinguishable over the structure of Mikita for at least two reasons.

1. Claim 1 now recites "a separate protective panel for each of the PV panels" In contrast, the waterproofing roofing membrane 2206 of Mikita extends beneath a number of the PV panels so that Mikita fails to disclose a separate protective panel for each of the PV panels. It would not have been obvious to modify the Mikita structure to separate roofing membrane 2206 into individual membrane elements with a separate membrane element for each PV panel because doing so would appear to destroy the waterproofing aspect of roofing membrane 2206.
2. Claim 1 has also been amended to state " the modular shade system defining open regions below the protective panels;" In contrast, a sheathing roofing board 2207 of Mikita is positioned between waterproofing roofing membrane 2206 and the support surface of Mikita so that the region below membrane 2006 is not an open region. Having this open region has several advantages including, for example, (1) permitting direct access from below to individual ones of the protective panels and the PV panels being protected, (2) promoting unhindered airflow to the protective panels for enhanced cooling of the PV panels, especially when the protective panels are perforated, and (3) effectively eliminating blocking light passing through the protective panels to either provide illumination below the PV panels or to permit passage of light to the lower surfaces of bifacial type of PV panels (wherein light impinging on both the upper and lower surfaces can be transformed into electrical energy). It would not have been obvious to modify the

structure of Mikita to obtain this open region because doing so would eliminate the structural support required by waterproofing roofing membrane 2206.

Accordingly, independent claim 1 is allowable over the cited art.

Independent claim 31 has been amended in a manner similar to that of claim 1.

Accordingly, claim 31 is allowable for the same basic reasons.

The **dependent claims** are direct to specific novel subfeatures of the invention and are allowable for that reason as well as by depending from novel parent claims. Specific examples are described below.

With regard to **claims 10 and 33**, the Examiner has stated that it would have been obvious "to use the transparent module of Berman with the protective backing of Samuelson in MacArthur" However, the polymer or glass back 30 of Samuelson is part of the PV modules; it is not a separate, spaced apart panel. Also, there is no suggestion in Samuelson that is a protective panel. Rather, it is stated to be a polymer or glass back 30 in contact with the solar cell; as such, there is nothing in Samuelson suggesting that polymer or glass back 30 would be suitable as a protective backing. Any impact against back 30 would be transmitted directly to the solar cell with possible damage to the solar cell. In addition, such impact could possibly break back 30 and damage the solar cell, especially if back 30 is made of glass. Therefore, there is nothing in Samuelson to suggest using an additional protective panel, much less a protective panel (1) constructed to permit some light to pass therethrough, and (2) spaced apart from the solar cell module.

As to **claims 11 and 34**, the Nath patent discloses an architectural panel 10 having a photovoltaic generator device 12 laminated onto a generally concave central portion 14 of panel 10. Portion 14 is not spaced apart from device 12 and could not be spaced apart from device 12 because it acts as the support for the device. Even assuming, for the sake of discussion, that the cited art (Mikita, MacArthur and Hartman) discloses a protective panel, it would not have been obvious to make that protective panel convex when viewed from below in light of Nath because the convex structure of Nath is not used as a protective panel but rather as the basic support for the lamination of photovoltaic generator device 12.

In the rejection of **claims 12 and 35**, the Examiner states that "the limitation "to provide ventilation for the PV panels" is functional, does not provide structural limitations on the claimed invention and is therefore not given patentable weight." However, the quotation is only a partial

quotation of the claimed element. The claims recite "wherein the protective panels comprise ventilating perforations to provide ventilation for the PV" panels/modules. That is, this claim element is directed to ventilating perforations, which are certainly structural. The remainder of the quoted portion of the claim helps to define the claimed ventilating perforations to one of ordinary skill in the art and therefore is not merely functional. The **Mori** patent has been cited as disclosing perforated back reinforcing sheet. Insofar as applicant can discern, reinforcing sheet 5 is described as being perforated in only one place in the patent. "This back reinforcing sheet is bent or perforated so that the solar-cell module can be attached by utilizing the bent or perforated part." Column 1, lines 26-28. Applicant previously amended claims 12 and 35 to clarify that the protective panels have ventilating perforations to provide ventilation for the PV panel. The type of perforations taught by Mori would be used for attachment and not for ventilation. That is, Mori does not disclose or suggest the use of ventilating perforations. Therefore, there would have been no reason to modify the protective panels of claims 8 or 31 in light of Mori to arrive at panels with ventilating perforations, as opposed to, for example, panels with mounting screw holes.

CONCLUSION

It is respectfully submitted that this application is now in condition for allowance, and such action is requested. If the Examiner believes a telephone conference would aid the prosecution of this case in any way, please call the undersigned at (650) 712-0340.

The Commissioner is hereby authorized to charge any fee determined to be due in connection with this communication, or credit any overpayment, to our Deposit Account No. 50-0869 (PWRL 1029-3).

Respectfully submitted,

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/James F. Hann/

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